Sargent & Greenleaf, Inc.

TECHNICAL BULLETINS

1 SECURITY DRIVE · NICHOLASVILLE, KENTUCKY 40356
TELEPHONE: (606) 885-9411 · FAX: 1-800-634-4843 OR (606) 885-3063

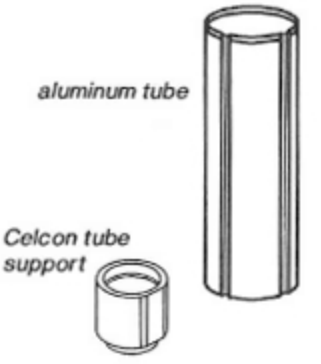
previous case cover screw holes were machine tapped to a minimum depth of .300 inch. Laboratory testing has shown that standard machine screws used in roll-formed threads exhibit more holding power than machine screws used in tapped threads.

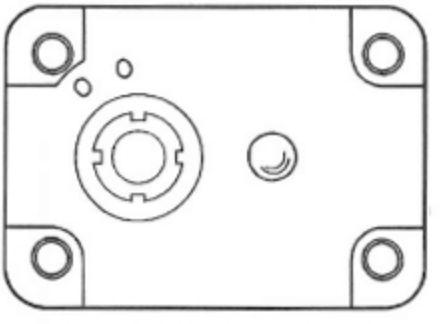
The new lock case will be used for both tube and non-tube locks. It will no longer be necessaary to purchase and stock separate locks for tube applications, and lock model numbers which identify tube locks are discontinued. To receive the new equivalent of an older 6735 tube lock, order the version of 6700 lock (except Scramabler®) you require and a U24 tube kit (see the example box on this page). The kit contains a Celcon tube support and aluminum tube which is long enough to accommodate a maximum safe door thickness of 3.406 inches. For thinner doors, cut the aluminum tube to the door thickness plus .130 inch. For bulk orders, S&G can supply the tube pre-cut to any desired length.

To install the tube, push the Celcon tube support into the lock case spindle hole as far as possible. Then push the aluminum tube over the Celcon support until it is flush with the lock, and its four ribs are engaged with the tabs cast into the case. When the system is installed in a safe, one end of the tube should be seated against the lock case, and the other end should be seated in the underside of the dial ring bearing.

The new case will be phased into production of Group 1 and 1R locks later in 1992. However, tube-equipped 8400 series locks will continue to use the older case style.

NOTE: Service and lubrication procedures for the affected locks are unchanged. Torque adjusments should remain in the range of 12 to 20 inch/ounces for non-Scrambler® Group 2 locks.





mounting surface of lock

ORDERING EXAMPLE
Distributor/Locksmith Individual Pack

Order no. 6730-010 includes:

- 6730 Group 2 combination lock
- (2) spline keys
- (4) 1/4 x 20 x .240 (short) mounting screws
- (4) 1/4 x 20 x .406 (regular) mounting screws
- (1) three-wheel change key

For tube applications, order part no. U24, which includes:

- (1) Celcon tube support
- (1) aluminum tube for a maximum 3.406 inch door thickness

Contact Sargent & Greenleaf Customer Service for bulk pack information.

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TB9203
Document L100

TECHNICAL BULLETIN

EFFECTIVE DATE : July 1, 1992

PRODUCTS AFFECTED : 6720, 6730 (all versions), 6731, 6736, 6738, 6770, 6780, 6781

IMPROVED CASE FOR STANDARD (NON-SCRAMBLER®), GROUP 2 COMBINATION LOCKS

Effective immediately, improved cases will be used as a component of the locks listed above. Features of the new cases include:

- increased resistance to side pressure on the lock bolt
- high performance thread rolling cover screws increase strip resistance by 30 to 50%
- retaining ring groove accommodates a Spirolox wheel pack retainer
- incorporates a gear-driven torque adjuster for more precise torque adjustment – *See area A*
- elimination of openings in the bottom of the lock case

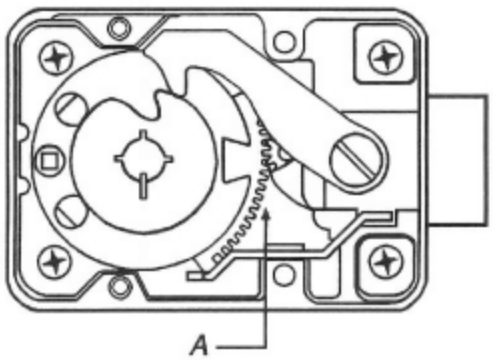
Except for the new case and integral torque adjuster, all lock components are interchangeable with the previous model. The mounting screw hole dimensions and locations are the same as in the previous case design.

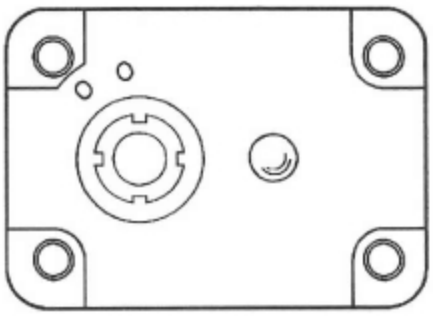
The improvements in the new case design and manufacturing processes reduce variations from one lock to the next. This results in more consistent performance in the locks manufactured with this case.

Cover screw holes in the lock case are now formed rather than machine tapped. Threads are formed to a depth of .200 inch into the case (less cover) when the high performance thread rolling screws are inserted at the factory. The screw cavities are designed so that, if necessary, standard 8-32 machine screws can be inserted past the roll-formed threads (to a maximum depth of .275 inch), using a torsional force of 45 inch-pounds. In comparison, the

(continued on reverse side)

lock case with cover removed





mounting surface of lock

Drawings are not to scale.

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TB9203
Document L100

TECHNICAL BULLETIN

EFFECTIVE DATE : March 31, 1992

PRODUCTS AFFECTED : 8400-001 (old #8400-000-100-LSA),
8500-001 (old #8500-000-100-LSA) Life Safety Kits

KEY AND COVER CHANGE FOR ALL LIFE SAFETY KITS

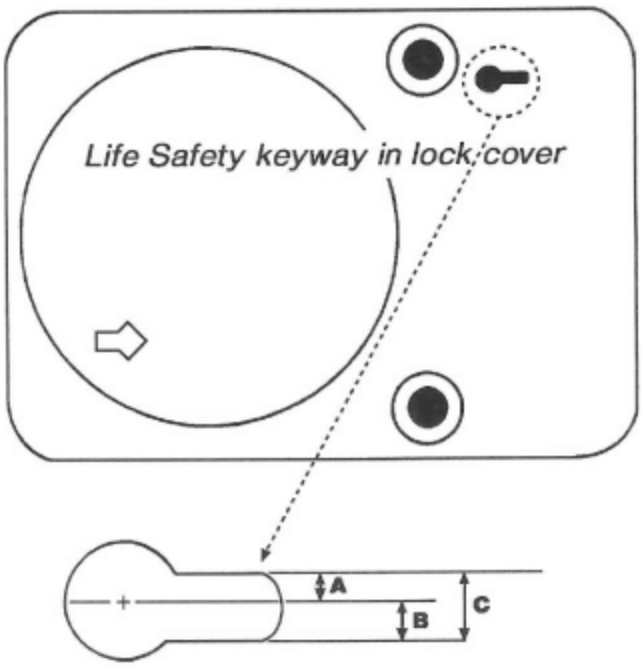
Life Safety Kits are used to retrofit existing 8470 deadbolt locks with a mechanism which prevents the deadbolt from extending and locking the door unless a Life Safety Key is inserted into the lock and turned from inside the secured area.

Effective immediately, Life Safety keys will be furnished standard in stainless steel. The part number for an individual stainless key is **8400-047-002-LSA.**

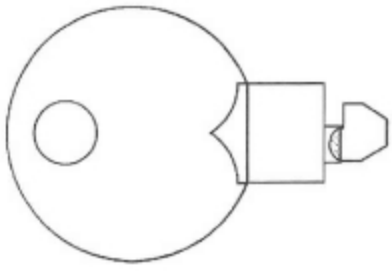
The keys are larger than the previous brass version and will ***not*** fit into the keyway of older 8400-000-100-LSA and 8500-000-100-LSA Life Safety Kit lock covers. Replacement keys for the older style covers will still be available in brass as part #8400-047-001-LSA.

All Life Safety lock covers manufactured after **March 31, 1992** will be equipped with a Life Safety keyway designed to accommodate ***only*** the new, stainless steel key. The Life Safety Kit which contains a new cover for 8400 model locks is part #8400-001, and the kit with a new cover for 8500 model locks is part #8500-001.

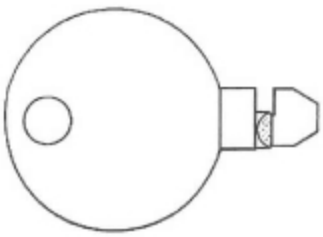
Dimensions of the old and new keyways are provided. Note that the new keyway is the same as the old keyway with .016 inch of material removed from each flat. It is possible to remove material from older style covers to allow them to accept the new keys. Care must be taken to insure the modification removes no more than .016 inch from each side of the keyway. The older style, brass keys should not be used in the wider keyway.



	DIM. A	DIM. B	DIM. C
OLD KEYWAY	.019	.036	.055
NEW KEYWAY	.035	.052	.087



new style, stainless steel key with thicker blade



older style, brass key with thinner blade

Note: Drawings are not to scale.

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TECHNICAL BULLETIN

EFFECTIVE DATE : January 1, 1992

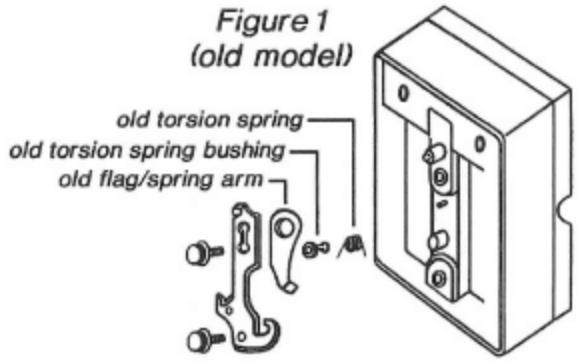
LOCK MODELS AFFECTED : 6281, 6282, 6283 Time Locks

TORSION SPRING ASSEMBLY CHANGE

Effective immediately, the torsion spring assembly in all 6281, 6282, and 6283 time lock cases consists of a new design torsion spring. This new spring replaces three components:

- old style torsion spring
- flag/spring arm (brass)
- torsion spring bushing (brass)

Figure 1
(old model)

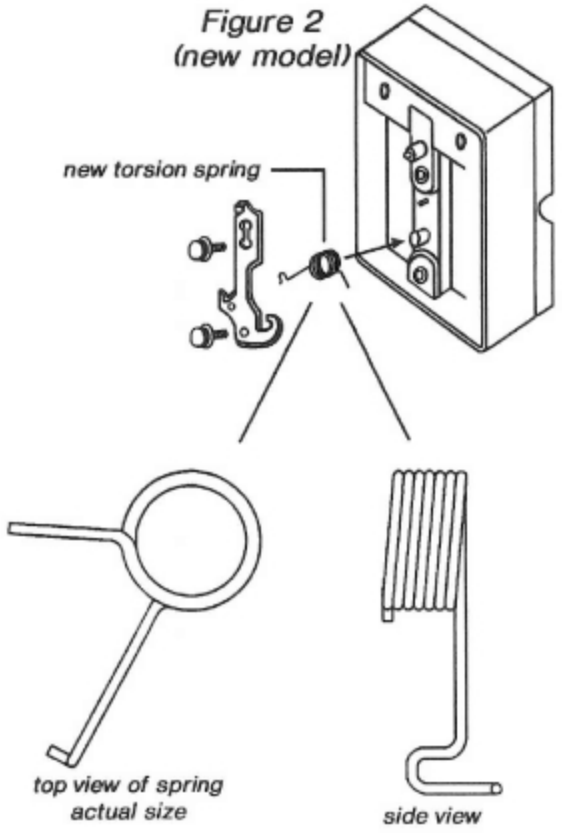


The new torsion spring is of heavier construction and a more advanced design than its predecessor. The new spring seats on the large diameter post which is just above the bottom carrier plate screw post (see *Figure 2*). The straight end of the spring rests against the right side of the carrier plate screw post, and the formed end is positioned to exert pressure on the right side of the carrier plate itself.

The new torsion spring can be used as a field replacement for the older, three-piece assembly. Performance and reliability of the time lock is enhanced by the use of the new spring.

The new torsion spring part number is **6280-008**. It can be ordered as a single part, and it will be used in all 6280 series time locks manufactured after January 1, 1992.

Figure 2
(new model)



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TECHNICAL BULLETIN

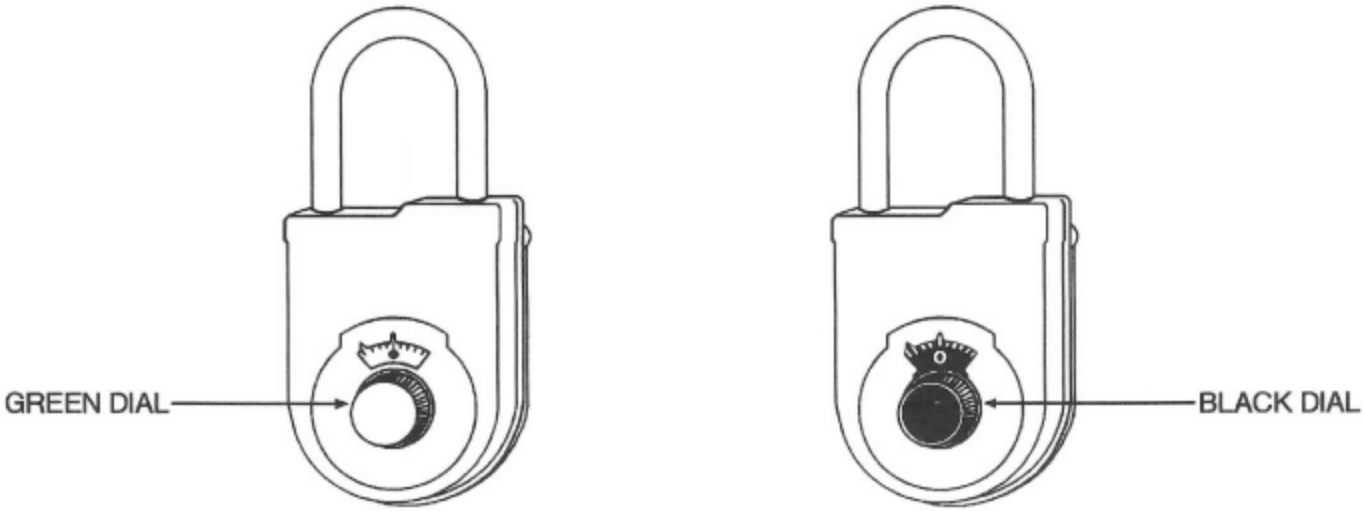
EFFECTIVE DATE : November 1, 1991

LOCK MODELS AFFECTED : 8077 series padlocks

8077AC PADLOCK ANNOUNCEMENT

Effective immediately, the Sargent & Greenleaf 8077AC combination padlock replaces the 8077AB model. In addition to a cosmetic change, the new padlock represents an improvement in resistance to surreptitious entry techniques.

The most visible change in the 8077AC is its black dial with white numbers. In other respects the 8077AC is identical in appearance to the most recent version of the 8077AB.



OBSOLETE 8077AB

NEW 8077AC

The 8077AC is the only padlock which meets the requirements of Federal Specification FF-P-110-G. Federal Stock Number 5340-00-285-6523.

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TECHNICAL BULLETIN

EFFECTIVE DATE : August 12, 1991

LOCK MODELS AFFECTED : 6750/6751 Scrambler

FORBIDDEN ZONE

Forbidden Zone is a term used to describe a range of numbers which cannot be used when selecting the last number for a combination. Use of a number within the Forbidden Zone for the final number of the combination can result in lock malfunction or erratic operation.

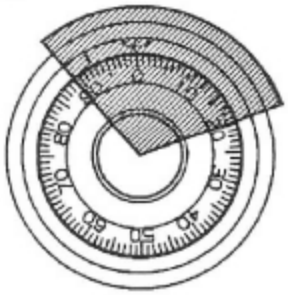
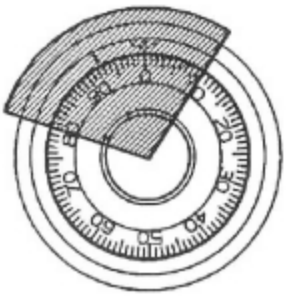
Scrambler models 6750 and 6751 can be used with either of two different types of dial/spindle assemblies:

1. spindle inserted into the dial with the spline keyway aligned with number 50 on the dial
2. spindle inserted into the dial with the spline keyway aligned with number 41 on the dial

Configuration #1 is considered standard, and results in contact points of approximately 5 and 14 for all models of Scrambler locks. When fully unlocked, the dial stops at about 95.

Configuration #2 is available on special request, and results in contact points of approximately 96 and 5 for all models of Scrambler locks. When fully unlocked, the dial stops at about 86.

Forbidden Zones are given for Scrambler locks used with each dial/spindle configuration, and the zone is shaded in each illustration.

SPINDLE TO DIAL SPLINE ALIGNMENT	FORBIDDEN ZONE	
Standard (splined at 50)	90 TO 20	
Special (splined at 41)	80 TO 10	

When working with a Scrambler lock equipped with a spindle splined into the dial at 50, do not select a number between 90 and 20 (90-99 and 0-20) for the third number of the combination.

When working with a Scrambler lock equipped with a spindle splined into the dial at 41, do not select a number between 80 and 10 (80-99 and 0-10) for the third number of the combination.

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TECHNICAL BULLETIN

EFFECTIVE DATE : January 1, 1991

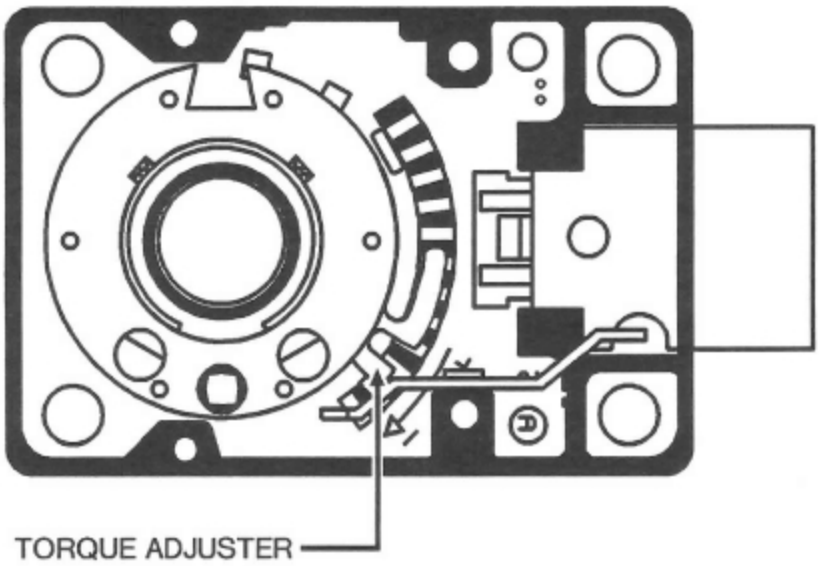
LOCK MODELS AFFECTED : All combination locks equipped with a torque adjuster

RECOMMENDED TORQUE PARAMETERS

Sargent & Greenleaf's patented torque adjuster is designed to allow for easy, precise adjustment of pressure against the wheel pack, which determines how much torque is necessary to rotate the lock's wheels. Setting the torque adjustment within specified ranges for a particular model of lock optimizes security and makes lock operation easier for the user. All locks are shipped from the factory with torque adjusters set to the following values:

8400 Group 1/1R series	18 - 22 in./oz.
8500 Group 1/1R series	18 - 22 in./oz.
6750/6751 Scrambler	06 - 10 in./oz.
All other Group 2 combination locks	12 - 20 in./oz.

As a lock ages during use, torque necessary to rotate the wheels tends to decrease. During routine servicing, torque should be checked with the spindle and drive cam removed. If necessary, reset the torque adjuster to bring the lock back into the appropriate range.



These torque specifications replace those listed in S&G Technical Bulletin TB8602, dated 7/20/86.

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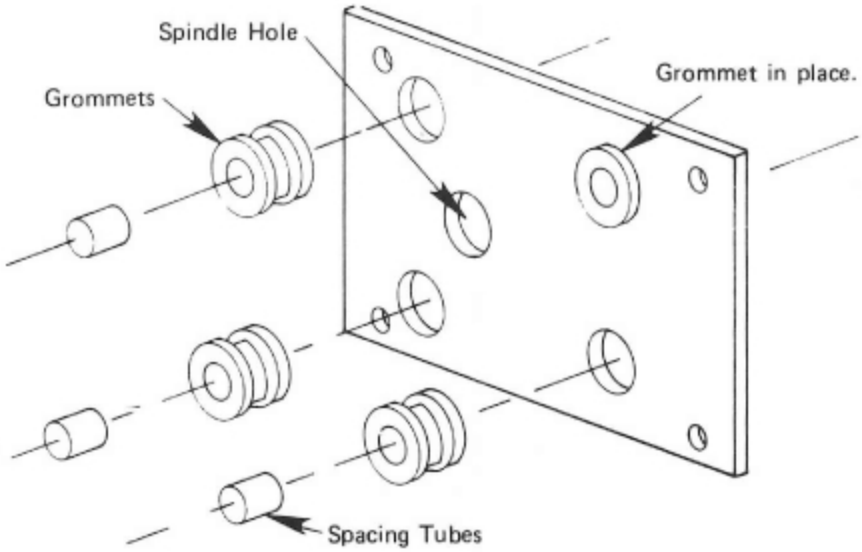
Technical Notes

From Sargent & Greenleaf, Inc.
Vol. 1, No. 6---Nov. 1, 1980

S & G Introduces Armor Glass®

Sargent & Greenleaf, Inc. is now offering a glass relocking plate as optional equipment on its 6700, 8400 MP® and 8500 MP® Series combination locks. Known as "Armor-Glass®" this specially tempered glass plate will also fit the combination locks of many other major manufacturers. It is designed to provide an extra layer of security for safes and cabinets against all forms of physical attack including drilling, punching, burning and the use of explosives or endoscopes.



Theory Of Operation

The Armor-Glass® relocking plate is designed for installation between the lock and the inside of the door of the safe or container. It comes with four pre-drilled mounting holes and one pre-drilled spindle hole. It also has four "corner" holes for use in controlling relocking devices.

After installation of the plate between the lock and the door, spring-loaded deadbolts are connected to the four corner holes of the plate by either plastic or steel cables or rods (see illustration). The cables/rods are attached under tension to secure the deadbolts in an unlocked position. The relocking plungers or deadbolts are not included in this kit and therefore are the responsibility of the installer.

With the "Armor-Glass® " plate in position, if any attempt is made to physically attack the lock such as drilling or punching, the glass plate will burst. The cables or rods controlling the deadbolts will thus be released allowing the bolts to extend to their locked positions. The door is then fully deadlocked.

Important Note!

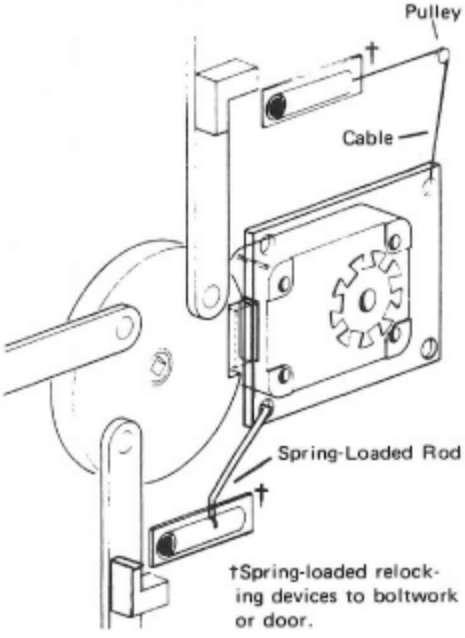
When ordering and installing the "Armor Glass®" relocking system, one important point must be considered. The plate itself is actually 5 mm (.195") thick. However, when installed, it increases the door thickness by 11 mm (.43").

Be sure to allow for this increased thickness when ordering your spindle length.

To order the "Armor Glass®" kit, specify Part Number G217. This kit includes:

1 Glass Plate (135mm x 84mm)
4 Extra-long Attaching Screws
4 Rubber Grommets
4 Spacing Tubes

Typical installation of Armor Glass® unit shown below. However, the unit can be used in a wide variety of other applications.



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Sargent & Greenleaf has determined that a potential problem exists with the Code/Tronic Models 1999 and 2001. Static charges may cause the unit to release the door strikes and could cause damage to the components.

If you are having this problem with your unit, please follow the procedure as outlined below:

Note: Your AC power source must be tested to make sure it is grounded properly. Use a standard three-pronged polarity tester which is available at your local hardward store.

Model 1999

1. Unplug and remove the two-prong transformer from service. Replace the two-prong transformer with the three-prong transformer, part number 8600-065-005-000. Ground the three-prong transformer by connecting one end of green ground wire assembly, part number 8400-481-507-000, to ground terminal of transformer and the other end to terminal #12 of unit.

2. **WARNING**: Transformer should not be plugged into power source until all circuit connections have been made.

Model 2001

Follow the procedure as listed above for Model 1999, with one exception: the second end of the green ground wire assembly should be connected to terminal #18 of the unit.

Replacement transformer with three prongs, part number 8600-065-005-000, and the ground wire assembly, which includes nine feet of #22 AWG green insulated wire and necessary terminal spades, part number 8400-481-507-000, will be provided at no charge by Sargent & Greenleaf. These parts will be available by the middle of February.

Please contact your Sales/Service Representative at 606-885-9411 with any questions on grounding the units, or to obtain the replacement parts.

Instructions for Converting a 6500 Series Vault Lock
From Right Hand To Left Hand (Continued)

13. Remove the steel pin from the bolt drop lever assembly, turn the drop lever over, align with the hole in the bolt, insert the steel pin, turn the bolt assembly 180° and install in the lock. Make sure the steel pin engages the bolt throw-out block.

14. Align all the wheels so the change key cams are aligned under the LH slot of the wheel bridge assembly.

15. Insert the 6500-043 change key in the assembly, turn and unlock the wheels.

16. Install the wheel bridge assembly into the lock case and install the two screws.

17. Procedure To Set A 4-Number Combination

    Select a 4-number combination, i.e. 10-20-30-40. A left hand lock requires a left hand turn to open, so to set a proper combination, you must dial as follows:

    A. Turn 5 times left to 10, on the change index.
    B. Turn 4 times right to 20, on the change index.
    C. Turn 3 times left to 30, on the change index.
    D. Turn 2 times right to 40, on the change index.

18. Turn the change to lock and remove the change key from the wheel bridge assembly.

19. Procedure To Check Combination

    A. Repeat steps 17-A through D, except use the opening index, not the change index.
    B. Turn left to open.

20. Slide the back cover on and install the cover screw carefully.

Check your combination at least three times before closing the door.

T88402
4/15/84

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TECHNICAL BULLETIN

Instructions for Converting a 6500 Series Vault Lock
From Right Hand To Left Hand

Since the 6500 Series Vault Lock works on the principal of a gravity fence-drop lever, it is necessary to have the drop lever on top of the lock for it to work. All 6500 Series Locks are assembled at the factory for the right hand mounting position. To convert a Right Hand 6500 Series Vault Lock to a Left Hand, simply follow the instructions carefully. Note: These instructions apply to a regular change vault lock, not an "0" change.

1. Place the lock in front of you with the bolt pointing to 3 o'clock.
2. Remove the cover screw and slide the cover off.

IMPORTANT!!
Be sure to place the parts on the table exactly as you remove them.

3. Remove the two wheel bridge assembly screws and then lift out the wheel bridge assembly.
4. Lift out the bolt and drop lever assembly.
5. Remove the three key steady plate screws and then lift out the key steady plate.
6. Lift out the drive cam.
7. Lift out the bolt throw-out block.
8. Turn the lock case 180^{0} so the bolt opening in the case is now pointing at 9 o'clock.
9. Turn the bolt throw-out block over and reinstall in the top of the lock case.
10. Turn the drive cam over and reinstall in the lock case.
11. Reinstall the key steady plate and install the three screws.
12. Install the lock on the vault door. Install the dial and ring.

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TECHNICAL BULLETIN

Sargent & Greenleaf Combination Locks

with Securmax Wheels

Models Affected: 6650, 6651, 6655, 6656, 6720, 6725, 6730, 6731, 6735, 8410, 8415, 8430, 8435, 8550, 8555, 8560, 8565

All Sargent & Greenleaf combination locks utilizing Securmax plastic wheels must be equipped with a Thermal Relock Cover. The Thermal Relock Cover is provided with a heat-fusible relock boss designed to protect the lock from attack by the application of heat.

The relock boss of a standard cover is an integral part of the die cast zinc cover. The Thermal Relock Cover has a silver colored boss that has been pressed into a cavity in the zinc cover.

If a metal wheel is replaced with an S&G Securmax plastic wheel, the lock may be vulnerable to heat attack unless you install a Thermal Relock Cover. When placing your order for the Thermal Relock Cover, you should clearly state on your purchase order to S&G's Customer Service the Thermal Relock Cover part number as listed below.

Model #	Thermal Relock Cover #	Model #	Thermal Relock Cover #
6650	8550-002-504-000	8410	8400-002-510-000
6651	6721-002-523-0GH	8415	8400-002-510-000
6655	8550-002-504-000	8430	8400-002-510-000
6656	6721-002-523-0GH	8435	8400-002-510-000
6720	6720-002-532-0GH	8550	8550-002-504-000
6725	6720-002-532-0GH	8555	8550-002-504-000
6730	6720-002-511-0GH	8560	8550-002-504-000
6731	6721-002-523-0GH	8565	8550-002-504-000
6735	6720-002-524-0GH		

TB8403
10/12/84

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TECHNICAL BULLETIN

COMBINATION LOCK WHEEL PACK RETAINING RING REMOVAL AND INSTALLATION

TB8404
12/1/84

S&G is changing the type of retaining ring used to secure the wheel pack to the wheel post in its standard R series and vault combination locks. This change will make the part more commercially available for the service technicians. The adoption of the Waldes Truarc Ring, commonly known as a "C" clip, is an effort on our part to facilitate servicing through increased standardization of parts.

Models Affected:

R-Lock Series: 6203, 6204, 6205, 6206, 6207, 6208, 6630, 6632, 6635, 6636,6650, 6652, 6655, 6656, 6720, 6721, 6725, 6730, 6731, 6735, 6736, 6738, 6739, 6760, 6770, 6774, 6775, 6780, 6781, 6785, 8410, 8415, 8430, 8435, 8550, 8555, 8560, 8565

Vault Locks: 6430, 6435, 6440, 6445, 6530, 6535, 6536, 6540, 6545, 6546

All listed combination locks will be provided with a Waldes Truarc Ring (No. 5103-62) to retain the wheel pack to the wheel post. This is a replacement for Ramsey Spirolox RST-62K.

FIG. 1

Removal:

These retaining rings are provided with two clearance reliefs. (Figure 1)

Rotate the retaining ring until one of the clearance reliefs is located at one of the two spacing washer slots of the wheel post. (Figure 2)

Using a sharpened probe or pick, move the leg of the retaining ring outward, then upward to remove from the wheel post.

FIG. 2

Installation:

Waldes Kohinoor, Inc. (Long Island, NY) provides a line of applicators for the installation of retaining rings.

The 5103-62 retaining ring may also be installed with a flat-blade screwdriver. Place the retaining ring with the two "feet" located in the ring groove of the wheel post (Figure 3).

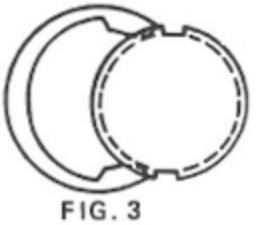
FIG. 3

Using a screwdriver blade, drive the ring into the wheel post groove from the side (Figure 4).

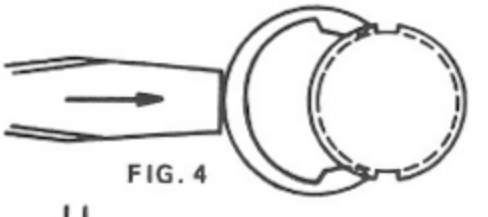
FIG. 4

In the R-Lock series, installation of the retaining ring can be eased by gently twisting the screwdriver, providing leverage against the inside wall of the case (Figure 5).

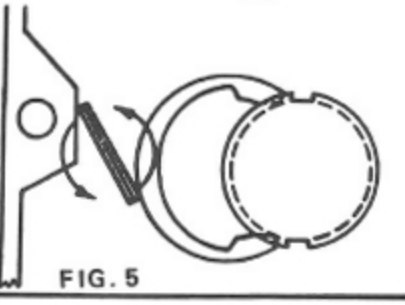
FIG. 5

SARGENT & GREENLEAF, INC.

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TELEPHONE: (606) 885-9411 TELEX: 21-8459

TECHNICAL BULLETIN

Sargent & Greenleaf will no longer make available the optional "SM 50 less lock" or as previously listed SM 50 - Omit. (Product Code Number 21014.) It has come to our attention that inadvertently a number of these units have been fitted in the field with locks not approved by UL for use on the SM 50. The SM 50 UL listing does not apply, when locks are assembled in the field, even if the locks individually are UL listed. The SM 50 UL listing only applies to a total lock assembly as it is shipped from the factory.

To avoid a continuing aftermarket problem of loss of ratings, we are no longer going to make the SM 50 Omit available and it is now dropped from our production.

The various SM 50's remain available with locks and are, of course, UL approved as marked. We appreciate your passing this information on to other users who have a need because of requirements of the Department of Defense and others to maintain the UL approvals on their SM 50's.

TB-85-02
2/18/85

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TECHNICAL BULLETIN

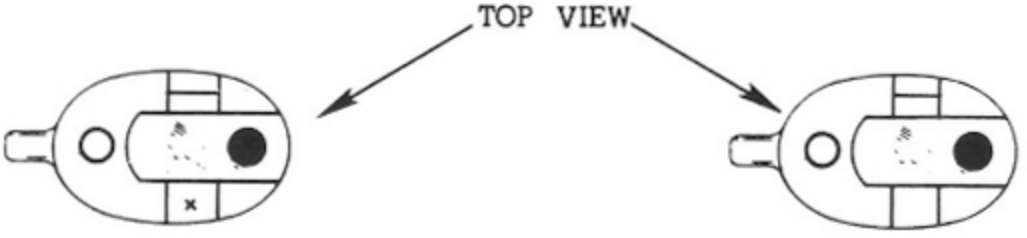
Sargent & Greenleaf

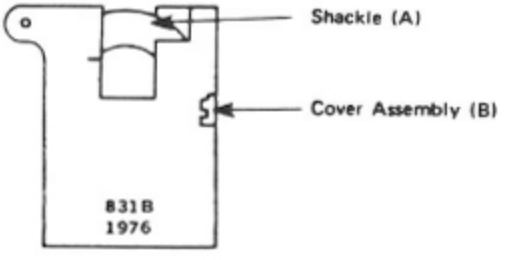
831-B High Security Padlock

EFFECTIVE IMMEDIATELY all new 831-B Padlocks will be date stamped 1984. This product has been updated to include the "X" Bolt and represents the latest version.

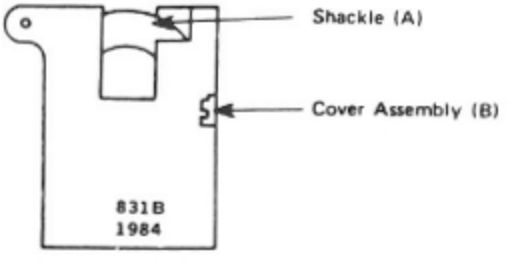
Previous 831-B Padlocks were date stamped 1976 and had an "X" stamped within the throat opening, to signify that the product contained the new "X" Bolt. Since all new Padlocks now contain the new "X" Bolt, there is no need to add this additional marking.

Proper identification of the latest 831-B is the date stamp 1984.





OLD VERSION



NEW VERSION

TB8503
3/11/85

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TECHNICAL BULLETIN

SECURMAX WHEELS

The locking blocks and cams of all SecurMax wheel assemblies have been colored with an organic dye. The purpose of this coloration is to increase the efficiency of our operators in the assembly and final inspection of the wheels.

The radiological security aspect of the SecurMax wheel assembly is not lessened or affected in any way by this dye.

TB8504
5/15/85

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TECHNICAL BULLETIN

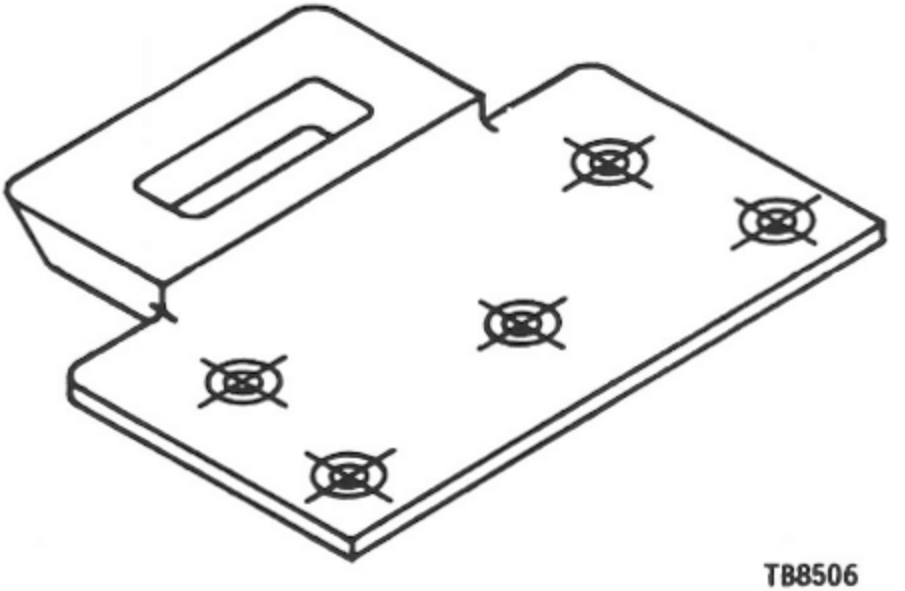
S&G #1 STRIKE

The S&G #1 Strike available for use on the 8470 dead bolt (SM-50) and the 8497 Brute has undergone several changes:

1) The material has been changed from a zinc alloy casting to a bronze casting. By changing the material from zinc to bronze we have more than doubled the strength of the #1 Strike.

2) A new identification number of **8497-001-001-000** has been assigned to replace the old ID number 8497-001-000-000.

3) Effective immediately, manufacturing and availability of the old zinc strike are discontinued.



TB8506
9/5/85

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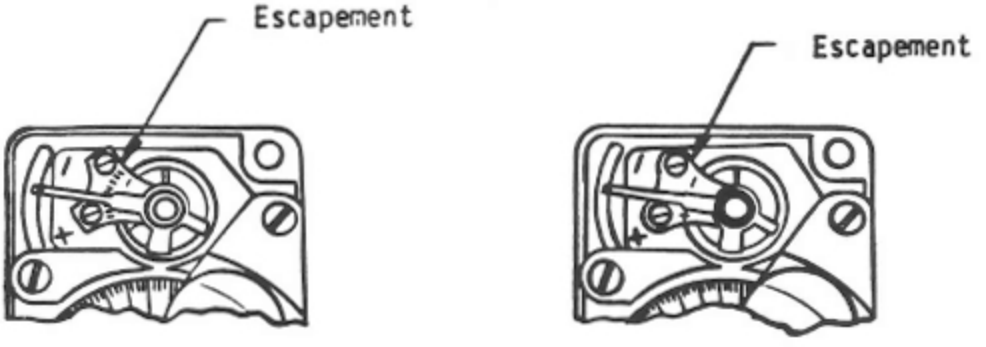
TECHNICAL BULLETIN

Due to a vendor error, some Time Locks have been equipped with a 10 jeweled fork and roller movement instead of a 13 jeweled fork and roller.

It is possible that Time Locks with the 10 jeweled movements could, for no reason, start slowing down or just stop working altogether.

Please check your Time Locks for the 10 jeweled movements. It is not necessary to remove the movement from the Time Lock to make this inspection.

A 13 jeweled movement will have nine lines on the escapement between the (+) and (-) whereas the 10 jeweled movement will have no lines on the escapement. The illustration below will help you identify the two movements.



13 Jewel 10 Jewel

Contact our Customer Service Department for instructions on replacement, 606-885-9411.

TB8601
09/05/86

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TELEPHONE: (606) 885-9411 TELEX: 21-8459

TECHNICAL BULLETIN

Torque Adjustment

Sargent & Greenleaf, Inc. has simplified the torque adjustment feature for R-series and MP style combination locks. This feature requires no tools except the change key.

Adjusting Instructions:

With the lock cover removed, insert the tip of the change key (Figure 2) into the slot in the torque adjuster tension spring (Figure 1). The dialing torque can be decreased by moving the tension spring in the clockwise direction, or increased by moving in the counterclockwise direction.

Note:

All locks are shipped from the factory with preset wheel pack torque as shown below.

Lock Type	Factory Torque Setting
8400 Series (MP), Group 1	18-24 in./oz.
8500 Series (MP), Group 1	18-24 in./oz.
R 6700 Series, Group 2	12-16 in./oz.

NOTE: Torque setting should always be 8 in./oz. or higher.

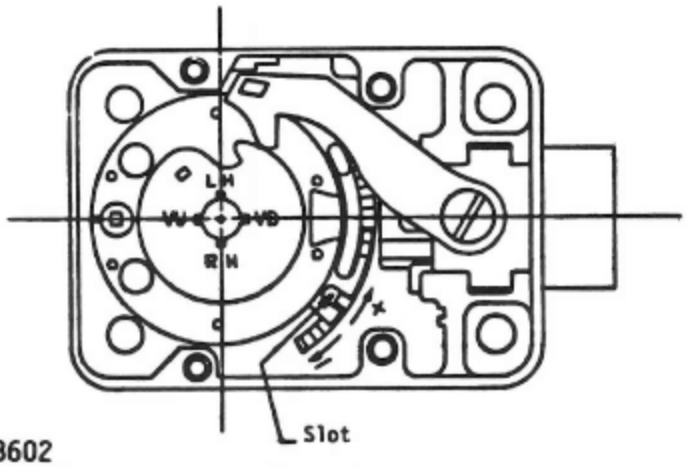

Figure 1.

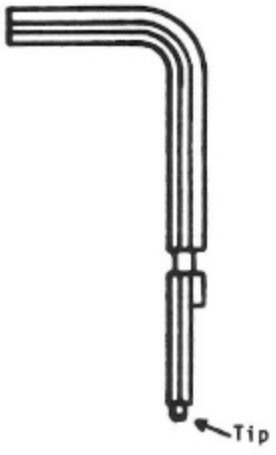

Figure 2.

TB8602
7/20/86

2001

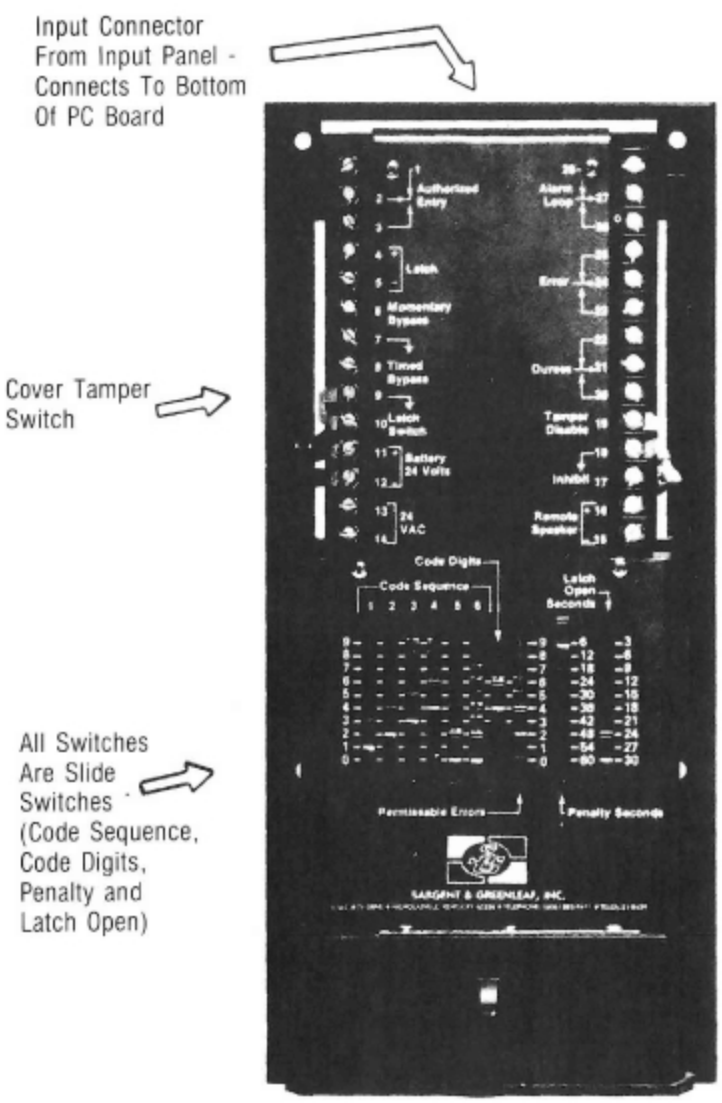

Fig. 3
2001
(Old Version)

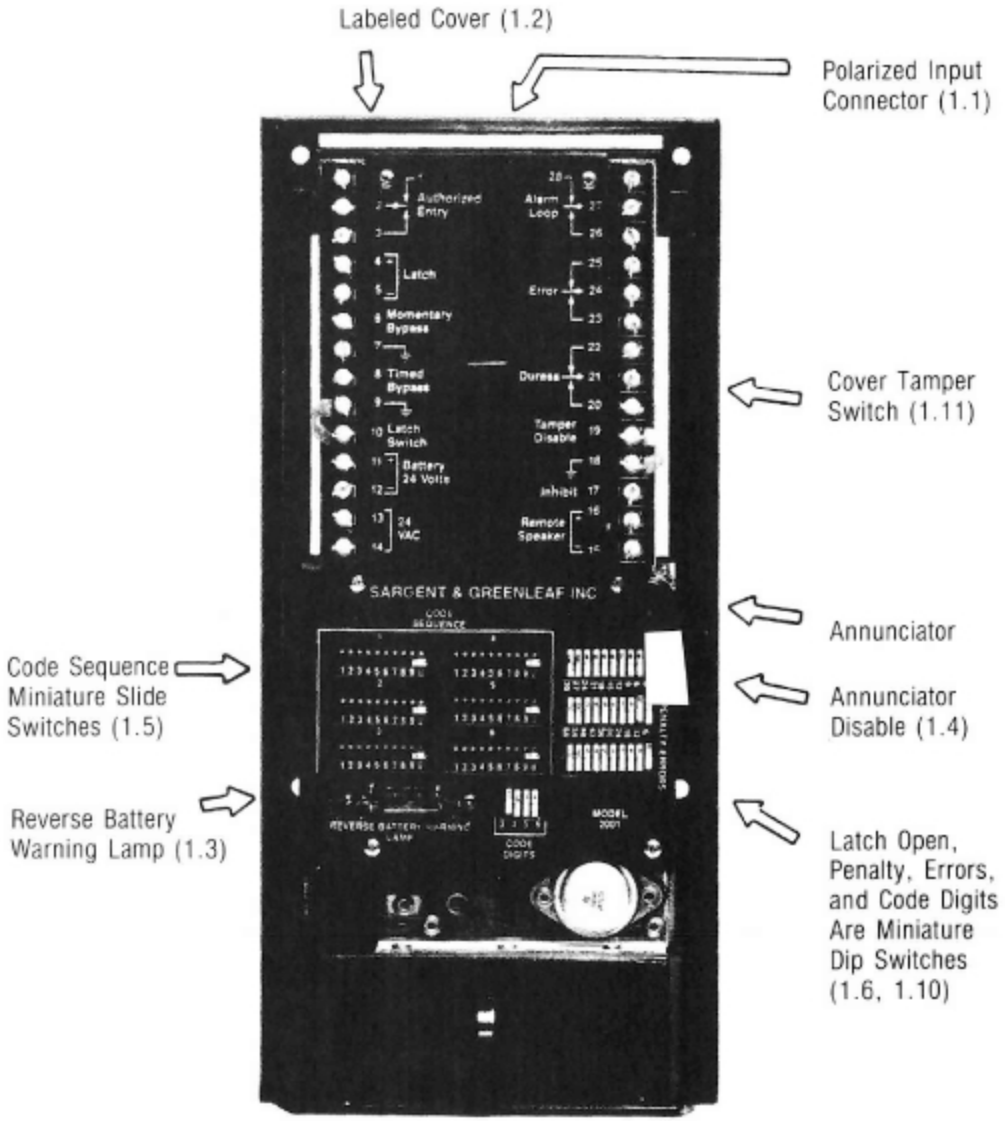
Labeled Cover (1.2)
Polarized Input Connector (1.1)
Cover Tamper Switch (1.11)
Annunciator
Annunciator Disable (1.4)
Latch Open, Penalty, Errors, and Code Digits Are Miniature Dip Switches (1.6, 1.10)
Code Sequence Miniature Slide Switches (1.5)
Reverse Battery Warning Lamp (1.3)
SARGENT & GREENLEAF INC
MODEL 2001

Fig. 4
2001
(New Version)

(Reference TB8606)

2.0 Input Panel - End connector now polarized allowing one way connection only.

3.0 Transformer - Secondary fuse deleted, now inherently protected.

4.0 Retrofit the Codetronics
If it becomes necessary to interface an existing remote key pad or rocker switch input panel to a new Codetronics Control Panel or a new remote key pad or rocker switch input panel to an older Codetronics, Refer to Fig. 5.

OLD VERSION

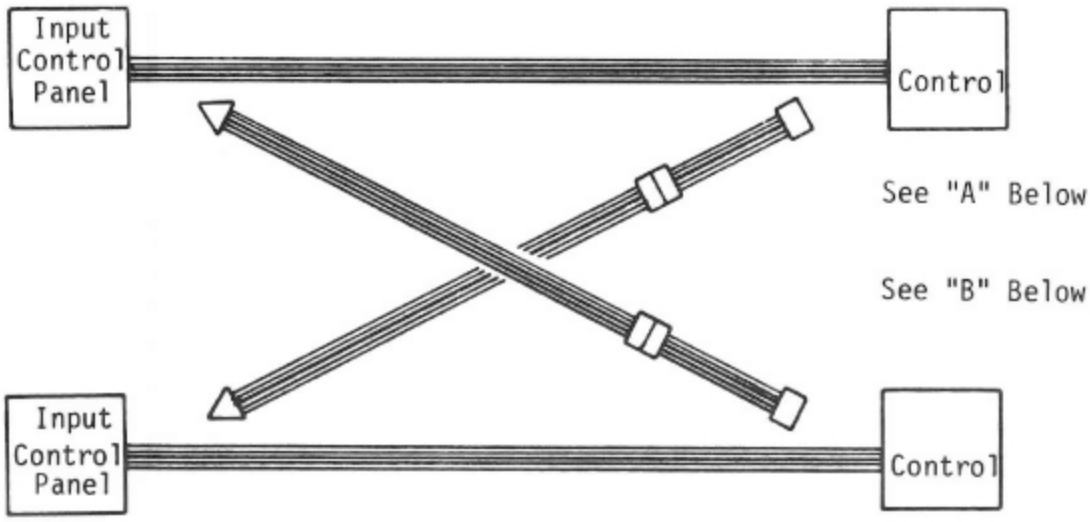

FIGURE 5

(A) This six inch ribbon cable adapter with a male connector on each end will allow you to interface from a new input control panel (RPA/KPA) to an old version Codetronics.

P/N 5006-750-004-000

(B) This six inch ribbon cable adapter with a male connector on each end will allow you to interface from an old version input panel to a new version Codetronics.

P/N 5006-750-005-000

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TECHNICAL BULLETIN

October 8, 1986

The following article will help to explain the differences between the old and new version Codetronic Models 1999 and 2001. To assist in understanding the various features and functions use figures 3 and 4.

MODEL 2001

1.0 The appearance of the new 2001 control is different in the following ways:

- 1.1 Input Connector - Now polarized (allowing one connection only) located at the top of the control of the component side of the printed circuit board and beneath the label.
- 1.2 Labeled Cover - Was metal, now nonconductive material.
- 1.3 Reverse Battery Warning Lamp - Added and will glow if the battery leads are connected up in reverse.
- 1.4 Internal Annunciator Disable - A jumper on right side of printed circuit board may be cut to disable internal annunciator only.
- 1.5 Code Sequence Switches - Large discrete slide switches replaced by miniature integral slide switches to improve reliability.
- 1.6 Error, Penalty, and Latch Open Switches - Large discrete slide switches replaced by miniature integral dip switches to improve reliability.
- *1.7 Lightning/Transient Protection - Spark gaps added to printed circuit board (PCB) and transient suppressors to prevent component damage.
- *1.8 RFI Circuit - This protection now an integral part of PCB, eliminates faulty unlatching of brute.
- *1.9 IC Soldering - IC sockets eliminated; IC soldered directly to PCB improving reliability.
- 1.10 Code Digit Select Switches - Large slide switch replaced by miniature integral dip switches to improve reliability.
- 1.11 Cover Tamper Switch - Optical switch replaced by mechanical switch to improve reliability.
- 1.12 Electro-static Protection Devices incorporated with series impedance and clamping devices.

*These Features Not Visible On Fig. 4

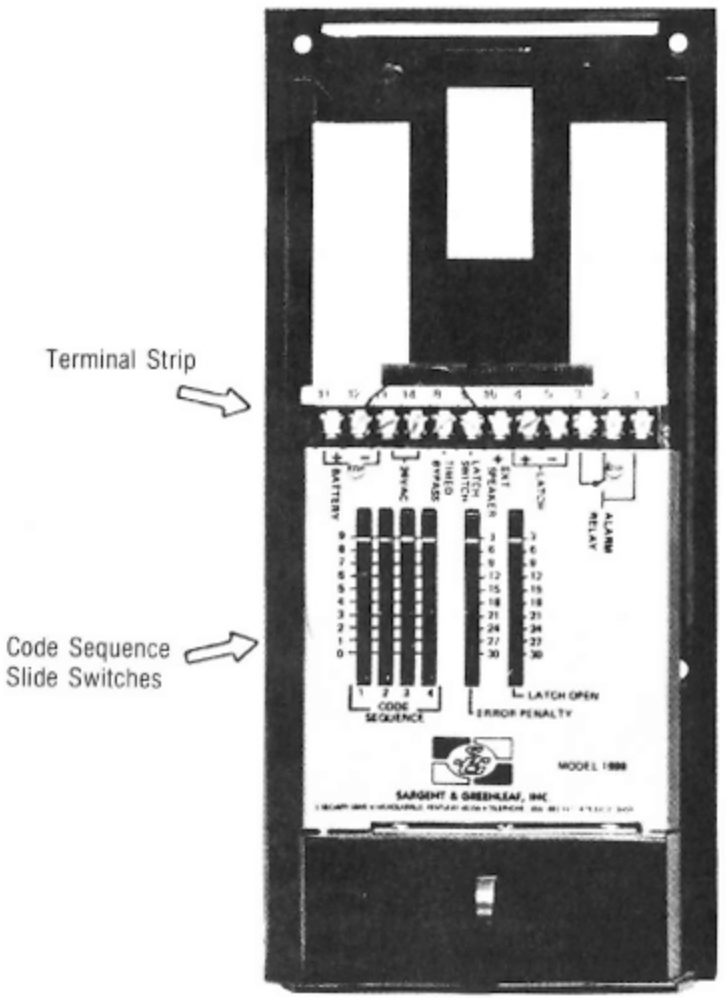

Fig. 1
1999
(Old Version)

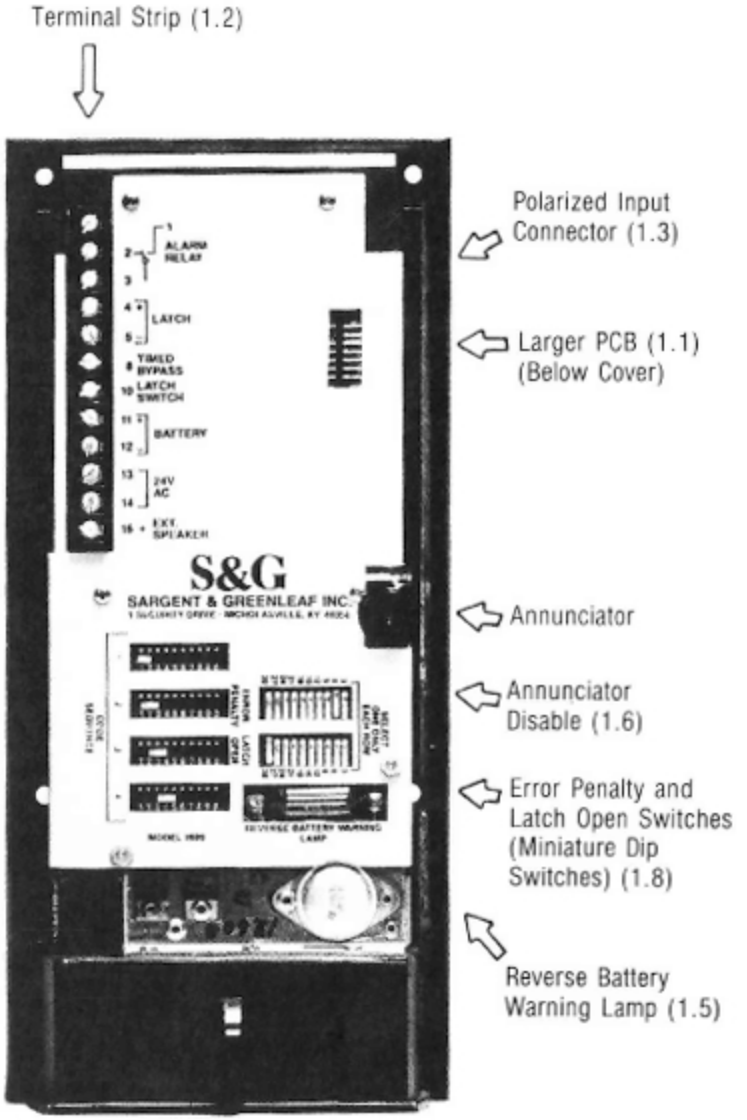

Fig. 2
1999
(New Version)

(Reference TB8605)

2.0 Input Panel - End connector now polarized allowing one way connection only.

3.0 Transformer - Secondary fuse deleted, now inherently protected.

4.0 Retrofit the Codetronics
If it becomes necessary to interface an existing remote key pad or rocker switch input panel to a new Codetronics Control Panel or a new remote key pad or rocker switch input panel to an older Codetronics, Refer to Fig. 5.

OLD VERSION

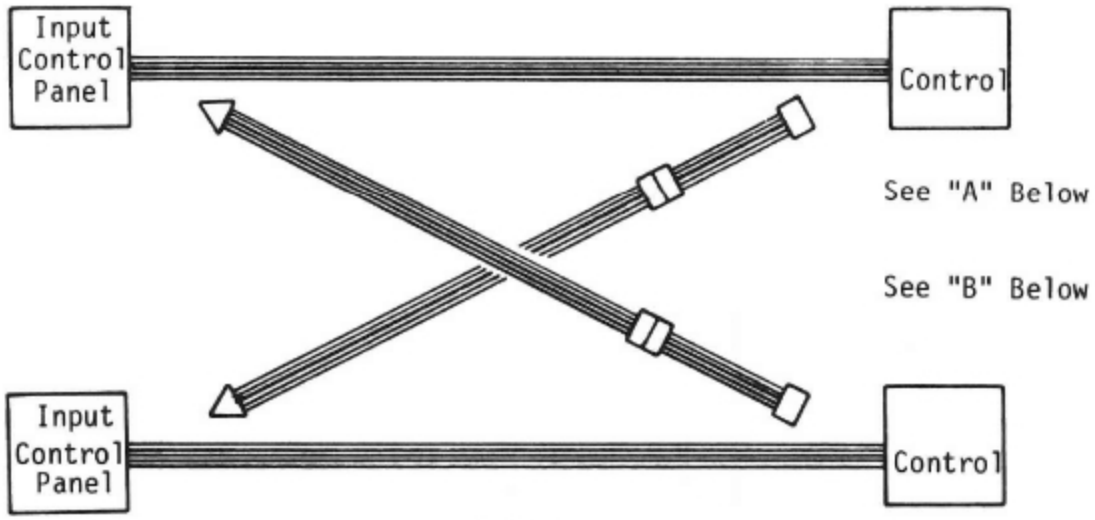

FIGURE 5

(A) This six inch ribbon cable adapter with a male connector on each end will allow you to interface from a new input control panel (RPA/KPA) to an old version Codetronics.

P/N 5006-750-004-000

(B) This six inch ribbon cable adapter with a male connector on each end will allow you to interface from an old version input panel to a new version Codetronics.

P/N 5006-750-005-000

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TECHNICAL BULLETIN

October 8, 1986

The following article will help to explain the differences between the old and new version Codetronic Models 1999 and 2001. To assist in understanding the various features and functions use figures 1 and 2.

MODEL 1999

1.0 The appearance of the new 1999 control is different:

*1.1 Printed Circuit Board (PCB) - Now larger.
1.2 Terminal Strip - Now located along left side.
1.3 Input Connector - Now polarized (allowing one way connecting only) located on right side (accessible from front).
1.4 Labeled Cover - Was metal, now nonconductive material.
1.5 Reverse Battery Warning Lamp - Added and will glow if battery leads are connected in reverse.
1.6 Internal Annunciator Disable - A jumper on right side of printed circuit board may be cut to disable internal annunciator only.
1.7 Code Sequence Switches - Large discrete slide switches replaced by miniature integral slide switches to improve reliability.
1.8 Error Penalty and Latch Open Switches - Large discrete slide switches replaced by miniature integral dip switches to improve reliability.
*1.9 Lightning/Transient Protection - Spark gaps added to printed circuit board (PCB) and transient suppressors to prevent component damage.
*1.10 RFI Circuit - This protection now an integral part of PCB, eliminates faulty unlatching of brute.
*1.11 IC Soldering - IC sockets eliminated; IC soldered directly to PCB improving reliability.
*1.12 Electro-static Protection Devices incorporated with series impedance and clamping devices.
*1.13 Jumper between terminal 12 & 9 on old Codetronics now incorporated on PCB.

* These Features Not Visible On Fig. 2

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TECHNICAL BULLETIN

BACK COVER - 8470 DEADBOLT (formerly SM-50)

Adding the "Lock-Open Latch" to the back cover of the 8470 Deadbolt provides a convenient alternative to door traffic delays. Previously, the 8470 Deadbolt was left in the unlocked position during working hours in an attempt to avoid dialing the combination each time an employee enters the protected room. This accessibility to the protected room is quickly cancelled, however, if the dial of the combination lock is inadvertently spun by a passerby.

Sargent & Greenleaf's "Lock-Open Latch" prevents this by using a sliding latch on the back cover of Group 1 and 1R Combination Locks. When the latch is engaged, it holds the bolt open and restricts dial movement. To reactivate the lock, simply disengage the latch.

The "Lock-Open Latch" has become a standard feature of Sargent & Greenleaf's 8470 Deadbolt (formerly SM-50). New back covers can be purchased to "retrofit" existing installations.

8400 Series Back Cover

Use with S&G 8400 Series Combination Locks, Order Part Number: 8440-002-515.

8500 Series Back Cover

Use with S&G 8500 Series Combination Locks, Order Part Number: 8555-002-510.

Contact your S&G Distributor for price and availability.

TB8607
December 19, 1986

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TECHNICAL BULLETIN

8077 Changeable Combination Padlock

Several design changes have been incorporated into the 8077 padlock, thereby improving the dialing accuracy and increasing its security. They include:

- Modifications to Shell Cover
- Breakaway Fracture Line on Back Cover
- Improved "Opening" and "Changing" Indexes

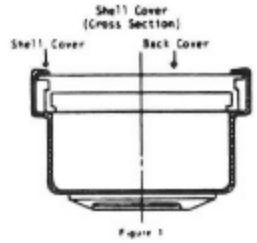

Figure 1

The shell cover wraps around the outer edge of the back cover, except at the top of the lock. The design change improved the main body fit in the shell cover, thus providing a "snug" fit for easier and more accurate combination dialing. (Figure 1)

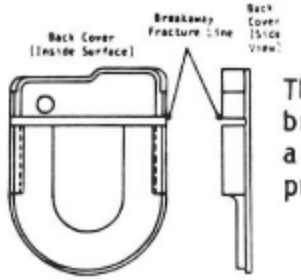

Figure 2

The inside surface of the back cover has a breakaway fracture line. This feature will provide a visual indicator that an attempt has been made to pry the back cover. (Figure 2)

Figure 3

Identification of this new revision is easily visible with the 8077AB number stamped on the back cover. (Note: The 8077A and 8077AB are the only padlocks that meet Federal Specification FF-P-110.) With the shackle in the locked position, the cover locking screw protrudes beyond the back cover surface. The cover locking screw has been designed to continue to turn while turning counterclockwise, and will no longer come to a stop as stated in the "changing procedure" instructions, step 4. (Figure 3)

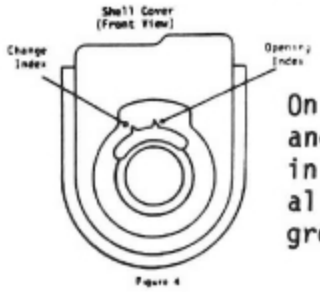

Figure 4

On the front side of the shell cover, the "opening" and "changing" indexes are represented as notches in the dialing window. These notches improve alignment of the dial numbers to the index for greater dialing accuracy. (Figure 4)

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TECHNICAL BULLETIN

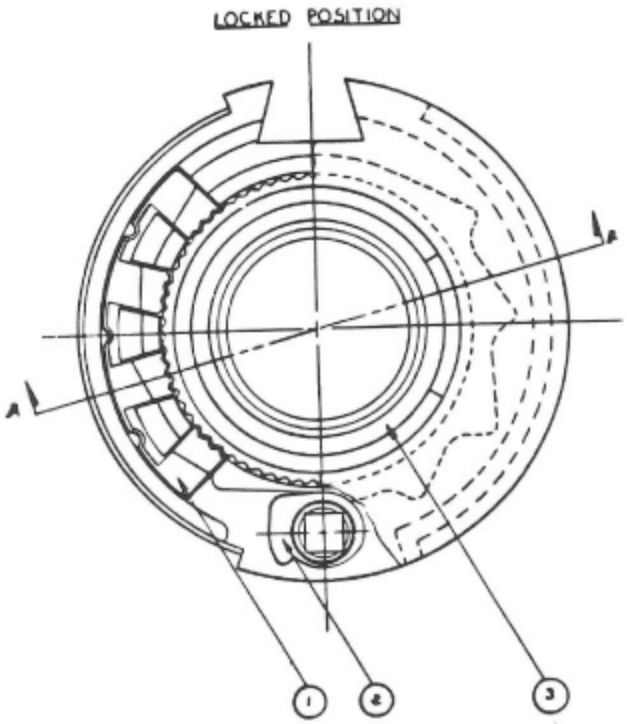

Fig. 1

(1) Locking Blocks
(2) Cam
(3) Wheel Center

SECURMAX WHEELS

I. Securmax wheels use two sets of locking blocks, one set on either side of the wheel center, and a cam for unlocking and locking the locking blocks from the wheel center.

These two components have been dyed black and/or red. This was done to aid in the visual inspection, insuring that all the components were in the proper position as the wheels were assembled. (Reference Fig. 1)

Black dyed locking blocks and cams were used in the third and fourth quarters of 1985. Starting in the first quarter of 1986, the change was made to red components, and this is now the current production.

II. The red and black locking blocks and cams used in the Securmax wheels, have been tested and meet the U. L. Specifications for Group 1R, Manipulation Proof Combination Locks.

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TECHNICAL BULLETIN

TIMEBINATION LOCKS - MODELS 6205, 6207

Using an indicator light to identify the three (3) minute unlock interval (opening window), the following timing variations occur:

I. When a Timebination is connected to an indicator light that will identify the "opening window" when the delay period has expired, the duration of the indicator light will be between two (2) to three (3) minutes.

II. Relock will occur three (3) minutes after the indicator light initially comes on, plus or minus twenty (20) seconds.

CAUTION: The Timebination Lock models contain a precision time mechanism. Before operating the lock or changing the combination, be sure to read the operating and changing instructions.

If you have questions or need a copy of the operating instructions, please contact our Customer Service Department at (606) 885-9411.

TB8801
March 1, 1988

SARGENT & GREENLEAF, INC.
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TELEPHONE: (606) 885-9411 TELEX: 21-8459

TECHNICAL BULLETIN

Proper Installation of Spline Key

S&G has had inquiries from the field pertaining to proper installation and orientation of the spline key in the 6700 series Group 2 Combination Lock.

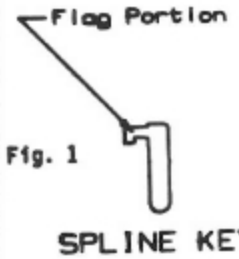

Fig. 1

SPLINE KEY

Fig. 2

To help insure the lock will function properly, the flag portion (Fig. 1) of the spline key should always be installed so it is oriented over the cam (Fig. 2). (Note: spline keys should only be used once, and be replaced with a new key.)

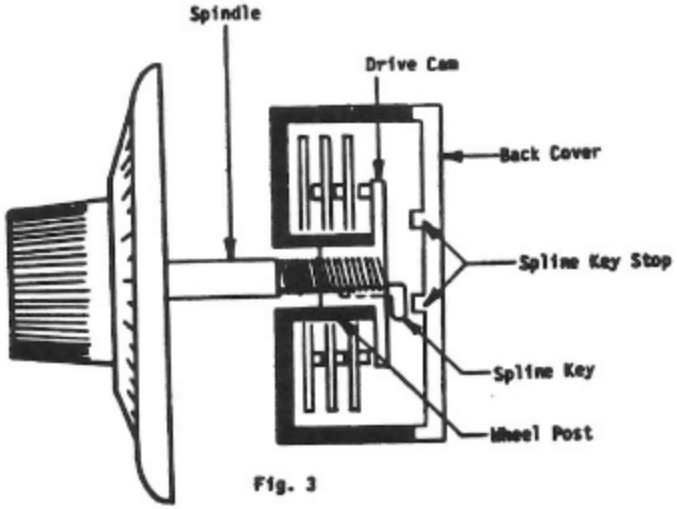

Fig. 3

Figure 3 illustrates; when properly installed the dial spindle should be flush with the top of the drive cam, and the flag portion of the spline key positioned over the cam. The spline key stop (a circle cast into the cover) will provide for and help maintain the proper positioning of the cam on the wheel post.

Warning: By not installing the spline key with the flag over the cam, the spline key stop cannot perform it's designed function, and a condition may be created that will allow the cam to drift off the wheel post allowing the lever nose to fall between the cam and the number 1 wheel. **This drifting condition will increase the potential for the lock to malfunction.**

TB8802
11/1/88

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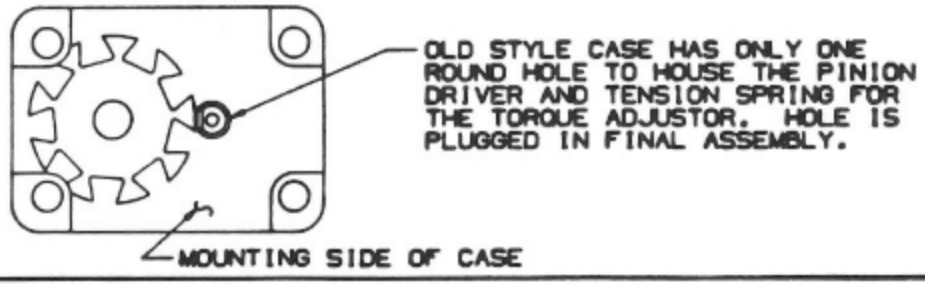
TECHNICAL BULLETIN

SARGENT & GREENLEAF COMBINATION LOCKS

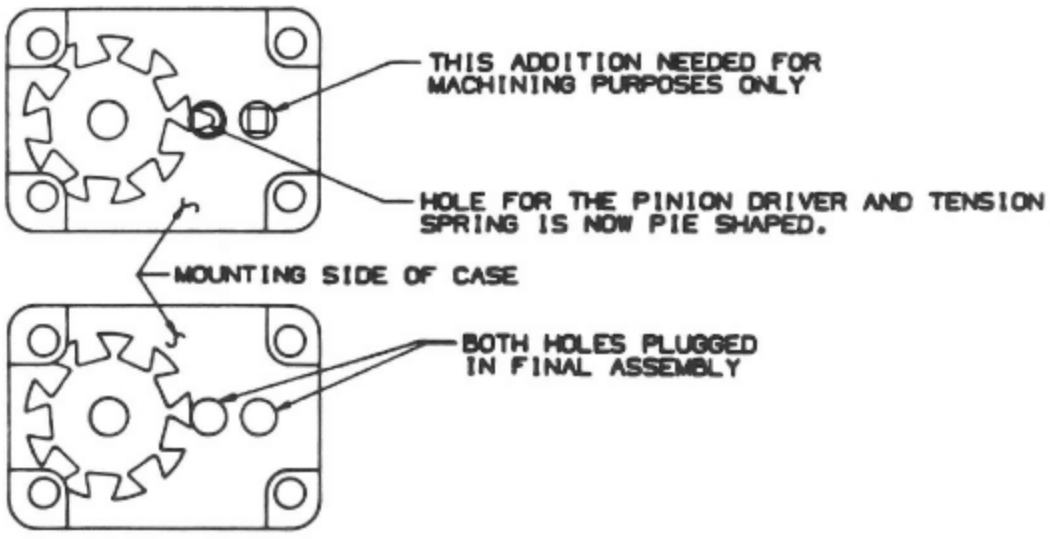
MODELS AFFECTED: 6206, 6208, 6725, 6731, 6735, 6736, 6774, 6775, 6781, 6785, 8410, 8415, 8430, 8435, 8550, 8560

Effective December 9, 1988, Sargent & Greenleaf made changes to the cases for the above models. These changes affect the pinion driver and tension spring hole for the torque adjuster. Plus, the new case will now have a second hole, which is a locator hole, used in the machining process. (See Fig. 2)

OLD STYLE (Fig. 1)


OLD STYLE CASE HAS ONLY ONE ROUND HOLE TO HOUSE THE PINION DRIVER AND TENSION SPRING FOR THE TORQUE ADJUSTOR. HOLE IS PLUGGED IN FINAL ASSEMBLY.
MOUNTING SIDE OF CASE

NEW STYLE (Fig. 2)


THIS ADDITION NEEDED FOR MACHINING PURPOSES ONLY
HOLE FOR THE PINION DRIVER AND TENSION SPRING IS NOW PIE SHAPED.
MOUNTING SIDE OF CASE
BOTH HOLES PLUGGED IN FINAL ASSEMBLY

TB8803
12/9/88

SARGENT & GREENLEAF, INC.
1 SECURITY DRIVE • NICHOLASVILLE, KENTUCKY 40356
TELEPHONE: (606) 885-9411 TELEX: 21-8459

TECHNICAL BULLETIN

8077AB Padlock Revisions

Fig. 1 Retaining Ring

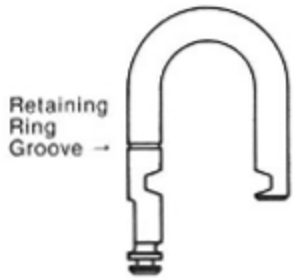


Fig. 2 Old Style Shackle

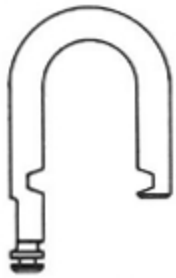


Fig. 3 New Shackle

1) Current Production 8077ABs no longer require a retaining ring (Fig. 1) on the heel side of the shackle. Also removed from the shackle is the milled groove for holding the retaining ring. Reference Fig. 2, for old style shackle with retaining ring groove, and Fig. 3 for new style shackle. This change is reflected in 8077ABs produced after May 1, 1989.

2) 8077AB outer shell will now have a six digit serial number stamped on the right side. Reference Fig. 4, side view of shell and serial number location. This change is reflected in 8077ABs produced after July 31, 1989.

3) All index mark graduations have been increased on the dial to improve visibility when dialing. This change was instituted after February 1, 1989.

The Model 8077AB, High Security Padlock, NSN 5340-00-285-6523, Federal Specification FF-P-110-G, continues to meet or exceeds the requirements of the Industrial Security Manual for "Three Position Dial Type Changeable Combination Padlock."

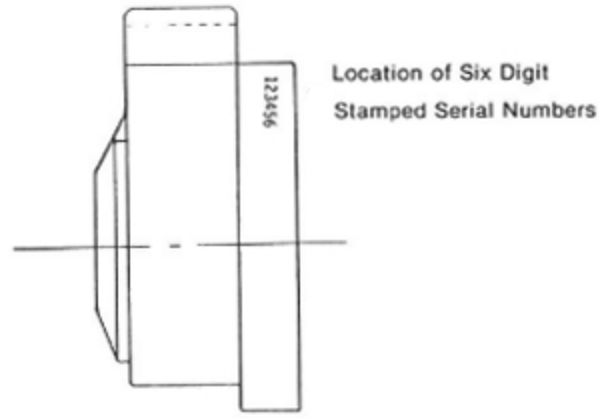


Fig. 4 Outer Shell - Right Side View

TECHNICAL BULLETIN

EFFECTIVE DATE: SEPTEMBER 29, 1989

LOCK MODELS AFFECTED: All 'R' Locks (6720-TOR, 6730-TOR, 6730-TOR-P/P, 6731-TOR, 6735-TOR, 6770-TOR, 6780-TOR, 6738-1SW-TOR, 6739-1SW-TOR)
6430-OGH-STD, 6435-OGH-STD, 6530-OGH-STD, 6535-OGH-STD, 6205, 6207, 6207-1SW-TOR
T8410MP, T8415MP, T8430XMP, T8435XMP, 8550MP, 8555MP, 8560XMP, 8565XMP

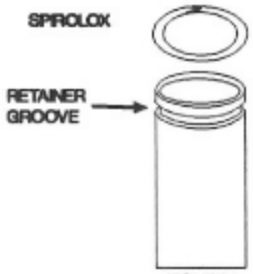


FIGURE 1

Locks built on cases cast after 09/29/89 will be equipped with Ramsey SPIROLOX wheel pack retainers. The S&G part number for the new retainer is 0000-338-112-000. It replaces the Waldes Truarc Ring used from 12/01/84 through 09/28/89. The SPIROLOX provides a uniform, 360-degree bearing surface to the top of the last wheel, providing smoother operation and longer life for the lock. To accommodate the SPIROLOX, the retaining ring groove in the wheel post has been changed from a diameter of .577-inch to .596-inch.

Truarc and SPIROLOX retainers should not be considered interchangeable. Cases machined for the SPIROLOX can be identified by the addition of a pair of raised dots (position noted in figure 2). Do not confuse the raised dots with small, circular marks made by mold ejector pins during the manufacturing process. The identification marks are raised; the ejector pin marks are not. Actual measurement of the retaining ring groove diameter or lock case date stamps can also help verify use of the proper retainer.

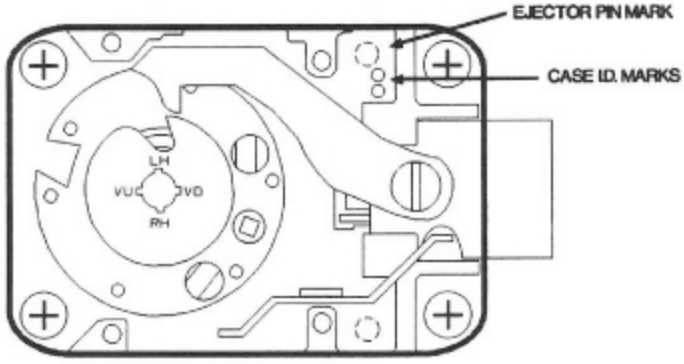


FIGURE 2

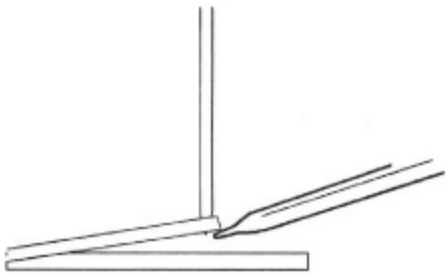


FIGURE 3

The SPIROLOX is removed by placing a pointed probe in the narrowed end of the retainer to pull it away from the wheel post just far enough to clear the groove. While holding the end of the SPIROLOX in this position, use a small, flat screwdriver blade to push the end of the retainer upward, until it is just above the wheel post groove. The retaining ring can now be worked upward on the wheelpost by lightly prying around its circumference. Care should be taken to keep any gap between adjacent coils of the SPIROLOX small.

To re-install, start the SPIROLOX at the top of the wheel post and work it downward toward the groove. Again, take care not to spread the ring's spirals.

Sargent & Greenleaf
One Security Drive, Nicholasville, Kentucky 40356
VOICE (606) 885-9411 TELEFAX (606) 885-3063

V. *Recalibration and assembly*

Step 1: Reassemble the timer movement to the cover plate by replacing the three 1/16" allen screws. Remember to hand the timer as it was originally installed.

Step 2: Install the cam as shown in Photo 1, so it can rotate 360 degrees without touching the cancellation cam.

Step 3: Note the condition of the mainspring as you rotate the cam in a clockwise direction. Rotate the cam until the outside diameter of the spring is approximately the same as the outside diameter of the brass disc located on top of the mainspring, as shown in Photo 4.

Step 4: Align the cam on the mainspring shaft so the cam retaining screw is in line with the cancellation cam, as shown in Figure A.

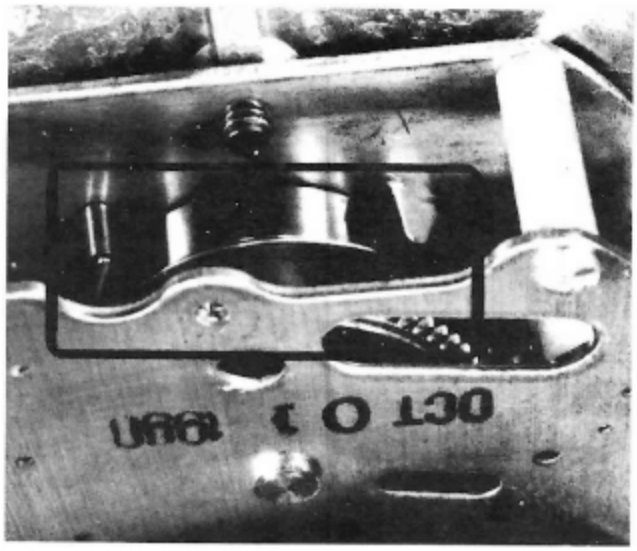


PHOTO 4

Step 5: Using a 7/64" allen key, tighten the cam retaining screw.

Step 6: Replace the timer plate in the cover by aligning the notch of the timer plate with the protruding stud of the cover.

Step 7: Using a 1/16" allen key, tighten the two corner screws.

Step 8: Replace the timer cover in its original position as follows:

- Make sure the key is removed from the lock cylinder.
- Push the lock bolt to the fully retracted position.
- Align the dot on the cover with the dot on the lock.
- Replace the cover and fasten with the four 7/16" allen screws.

■ Note: For dual switch models 6210-2SO and 6211-2S0, turn the cam clockwise to its maximum before replacing the cover.

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III. *Ultrasonic cleaning the timer movement*

Step 1: Fill the ultrasonic tank approximately 2/3 full of water.

Step 2: Fill one beaker approximately 1/2 full of L&R #111 watch cleaning solution.

Step 3: Fill the two remaining beakers approximately 1/2 full of L&R #3 watch rinsing solution.

Step 4: Place the timer movement in the beaker of cleaning solution. It must be fully submerged.

Step 5: Place the beaker in the ultrasonic tank. Turn the tank on, and let it run for three minutes.

Step 6: Following the three-minute cleaning cycle, place the timer movement in the first rinse beaker.

Step 7: Place the first rinse beaker in the ultrasonic tank and let the tank run for three minutes.

Step 8: Following the first three-minute rinse, place the timer movement in the second rinse beaker, and repeat step #7.

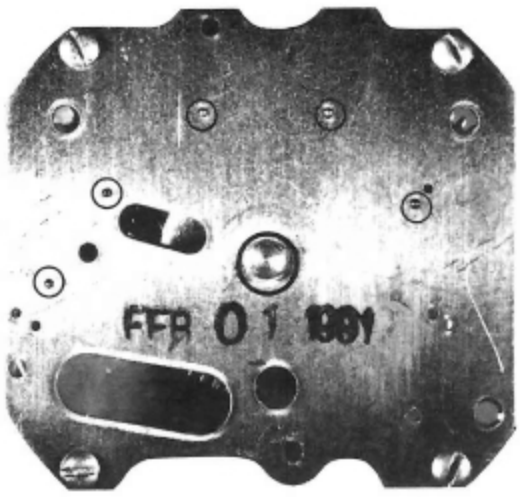
Step 9: Upon completion of the second rinse, allow the timer movement to dry completely. An air dryer can be used to speed up the drying process, so long as the air temperature is not allowed to exceed 120 degrees Fahrenheit.

IV. *Lubrication*

Using the flat tip oiler, apply only the amount of lubrication which the tip of the oiler will hold to each pivot bushing on the top and bottom plates of the timer movement. Photos #2 and #3 show the top and bottom plates with six lubrication points circled on each.

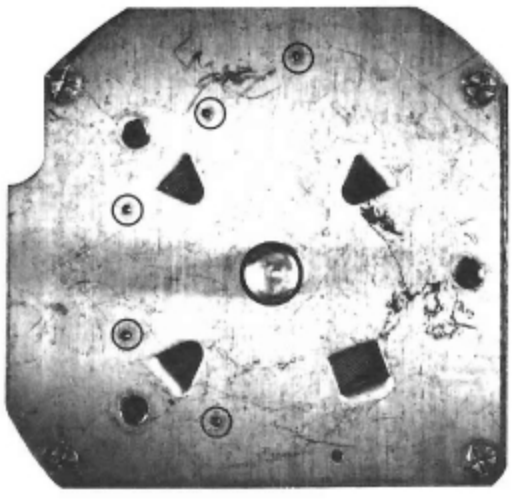
When lubricating any time movement, it is critical that you do not over-lubricate. When excess lubrication is present, it acts to attract dirt which will affect the dependability of the mechanism. The use of a high quality, synthetic oil is also very important.

PHOTO 2



TOP PLATE

PHOTO 3



BOTTOM PLATE

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Sargent & Greenleaf
TECHNICAL BULLETIN

EFFECTIVE DATE: MAY 1, 1990

LOCK MODELS AFFECTED: 6210, 6211 (all versions)

Cleaning Procedures for S&G 6210 & 6211 Mechanical Time Delays

Sargent & Greenleaf recommends annual servicing for the 6210/6211 series of mechanical time delays. More frequent service is required for any time mechanism which is subjected to a hostile environment (dust/dirt/high humidity) or high frequency of operation.

I. *Required equipment*

- 7/64" allen key
- 1/16" allen key
- watch cleaning solution L&R #111
- watch rinsing solution L&R #3
- 3 quart ultrasonic cleaning tank
- (3) 250 ml glass beakers
- synthetic oil (Syntalube: Bergeon 5388)
- flat tip oiler

II. *Disassembly*

Step 1: Using a 7/64" allen key, unscrew the four cover screws, and remove the timer cover.

Step 2: Using a 1/16" allen key, unscrew the two corner screws, and remove the timer plate (see Figure A).

Step 3: Using a 7/64" allen key, loosen the cam retaining screw (see Figure A).

Step 4: Lift the cam up the shaft until it can be rotated 360 degrees without touching the cancellation cam (see Photo 1).

Step 5: Note the condition of the mainspring while rotating the cam counterclockwise to remove all preload. When all of the mainspring preload is removed, the movement will not run.

Step 6: Remove the cam from the mainspring shaft.

Step 7: Use a 1/16" allen key to remove the three screws which hold the movement to the cover plate. It is very important to note the handling of the movement (RH, LH, VU, or VD) to ensure correct recalibration during assembly.

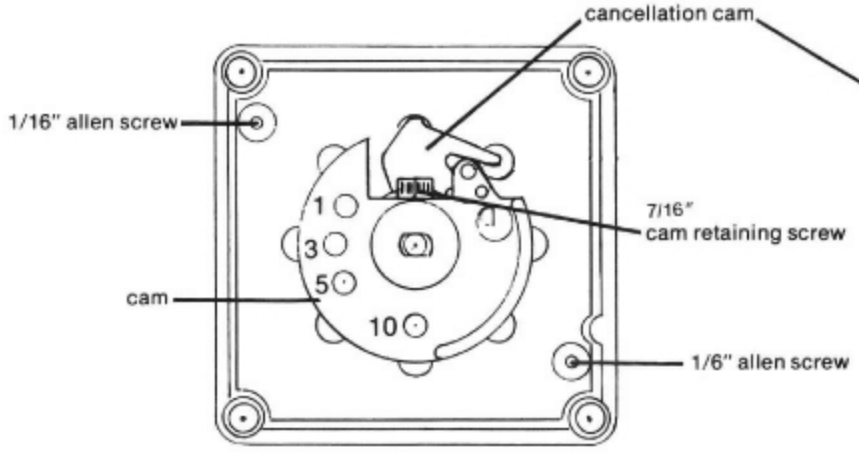

FIGURE A

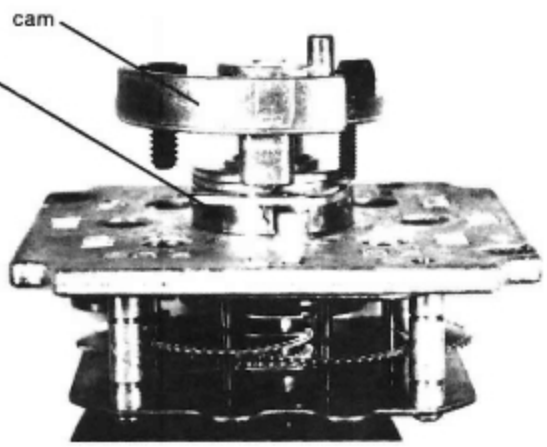

PHOTO 1

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Sargent & Greenleaf
TECHNICAL BULLETIN

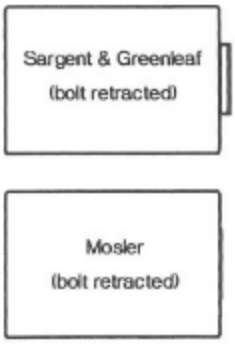
EFFECTIVE DATE : August 1, 1990

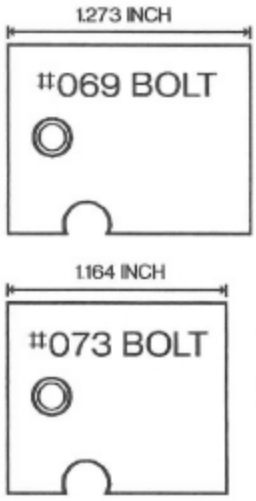
LOCK MODELS AFFECTED : All 8400 series, all 8500 series

REPLACEMENT OF MOSLER MR302 AND MRK302 COMBINATION LOCKS WITH SARGENT & GREENLEAF 8400 OR 8500 SERIES LOCKS

Standardized mounting hole patterns and dimensions allow the S&G 8400 and 8500 series combination locks to replace Mosler MR302 and MRK302 locks when necessary. The 8400 lock case is slightly thicker than the Mosler case, while for practical purposes, the 8500 case is nearly identical in dimensions.

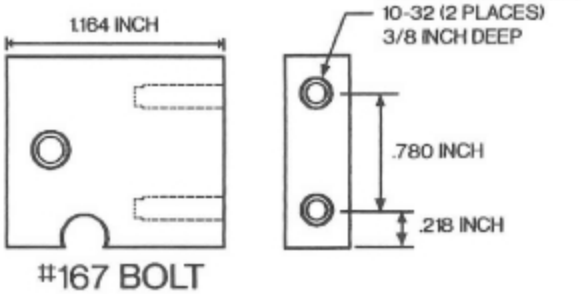
In the unlocked position, the Mosler lock bolt is virtually flush with the end of the lock case. Equipped with the standard #069 bolt, S&G locks still have a bolt extension of .109 inch when unlocked. Boltwork and cam plates in Mosler safes and cabinets may not bypass this slight S&G bolt extension, even though the lock bolt is retracted as far as possible.





To make S&G locks to work with Mosler containers, it may be necessary to replace the standard combination lock bolt with a #073 bolt (full part number 6730-003-073-000). This bolt is .109 inch shorter than the standard bolt. When fully retracted, it is flush with the 8400 and 8500 lock case. It extends .352 inch from the case in the locked position.

In Mosler container designs using a metal block attached to the end of the combination lock bolt, use S&G's #167 bolt (full part number 6730-003-167-000). This part is simply a #073 bolt with two 10-32 holes machined into the length of the bolt. The hole dimensions will match those required in current production Mosler equipment designed to use a block attached to the lock bolt.



Special bolts can be ordered separately, or complete locks can be ordered with the Mosler replacement bolts specified as part of the assembly. Example : "8560-TOR with #167 BOLT"

Sargent & Greenleaf
One Security Drive, Nicholasville, Kentucky 40356
(606) 885-9411 FAX (606) 885-3063

Sargent & Greenleaf

TECHNICAL BULLETIN

EFFECTIVE DATE : October 17, 1990

LOCK MODELS AFFECTED : All combination locks equipped with a relock trigger

RELOCATION OF DATE OF MANUFACTURE MARKING

To increase efficiency in manufacturing, the date stamp has been moved from the bottom of the lock case to the inside surface of the relock trigger lever arm. This change has no effect on the function or maintenance of the lock.

The format for assembly date coding has also changed. It now identifies the quarter of the year in which the lock was assembled. For instance:

"4 90" indicates assembly completion in October, November, or December of 1990

"1 91" indicates assembly completion in January, February, or March of 1991

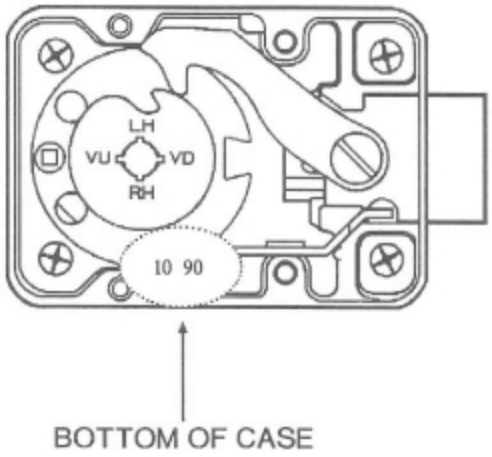
"2 91" indicates assembly completion in April, May, or June of 1991

"3 91" indicates assembly completion in July, August, or September of 1991

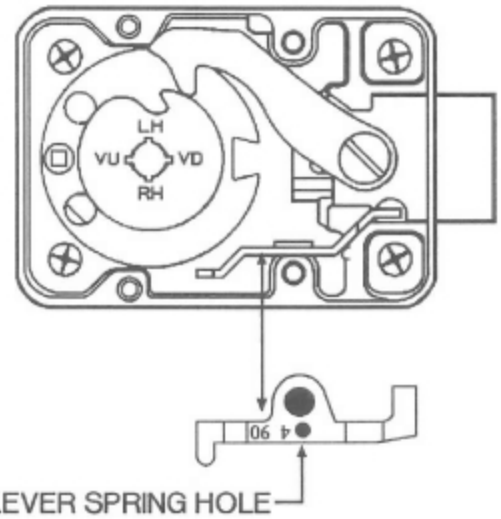
The previous date stamp format consisted of the month and year of assembly. "04 90" means the lock was manufactured in April of 1990 when the code is stamped in the bottom of the case. "4 90" means the lock was manufactured in the final quarter of 1990 when the code is stamped on the relock trigger lever arm.

A small hole was added to the relock trigger lever arm in mid 1990. This .093 inch diameter hole serves as one of the attachment points for the *Scrambler* (6750/6751) lever spring, but serves no purpose in other lock models.

OLD DATE STAMP LOCATION



NEW DATE STAMP LOCATION



Sargent & Greenleaf
One Security Drive, Nicholasville, Kentucky 40356
(606) 885-9411 FAX (606) 885-3063

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	11/1/80	S&G Introduces Armor Glass
TB 8401	02/07/84	Code/Tronic Models 1999 and 2001
TB 8402	04/15/84	Converting 6500 Series Vault Lock from Right Hand to Left Hand
TB 8403	10/12/84	Thermal relock cover for Securmax plastic wheels
TB 8404	12/01/84	Removal and installation of combination lock wheel pack retaining ring
TB 8502	02/18/85	SM50 - no longer made available
TB 8503	03/11/85	Updating of 831B High Security Padlock
TB 8504	05/15/85	Coloring of Securmax wheel assemblies
TB 8506	09/05/85	Availability of No. 1 strike for use on 8470 Deadbolt
TB 8601	09/05/86	Time Locks — 10 jeweled fork and roller movement instead of 13 jeweled movement
TB 8602	07/20/86	Torque adjustment for r-series and MP style combination locks
TB 8605	10/08/86	Explanation of differences in Code/Tronic Model 1999
TB 8606	10/08/86	Explanation of differences in Code/Tronic Model 2001
TB 8607	12/19/86	Addition of "Lock-Open Latch" to back cover of 8470 deadbolt
TB 8701	01/09/87	Design changes in 8077 changeable combination padlock
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TB 8901	07/31/89	8077 AB padlock revisions
TB 8902	09/29/89	Spirolox installation on r-locks
TB 9001	05/01/90	Cleaning procedures for 6210 & 6211
TB 9002	08/01/90	Replacement of Mosler locks with S & G locks
TB 9003	10/17/90	Relocation of manufacture date marking
TB 9101	01/01/91	Recommended Torque Parameters
TB 9103	08/12/91	Forbidden zone - 6750/6751 Scrambler
TB 9104	11/01/91	8077AC Padlock Announcement
TB 9201	01/01/92	Torsion Spring Assembly Change
TB 9202	03/31/92	Key and Cover Change For All Life Safety Kits
TB 9203	07/01/92	Improved case for standard (non-scrambler), group 2 combination locks